

Appl. No.: 10/560,391  
Amdt. Dated March 19, 2010  
Reply to Office Action Mail-Dated April 6, 2009

**Amendments to the Drawings:**

The attached drawing sheets 1-4 include changes to Figures 1, 4-10 and 12-14. Replacement sheets 1-4 include Figures 1-14, which replaces the originally filed sheets 1-4 including Figures 1-14. The following is a list of changes made:

Figure 1 reference number 10 is moved so it now points to the borehole;  
Figure 4 – relabeled as separate figures at Figures 4A1 and 4A2;  
Figure 5 – relabeled as separate figures as Figures 5A and 5B;  
Figure 6 – relabeled as separate figures as Figures 6A and 6B;  
Figure 7 – relabeled as separate figures as Figures 7A and 7B;  
Figure 8 – relabeled as separate figures as Figures 8A and 8B;  
Figure 9 – relabeled as separate figures as Figures 9A and 9B;  
Figure 10 – relabeled as separate figures as Figures 10A and 10B;  
Figure 12 – added reference numbers 31 for successive cells, 73, 75 for axial links and 80, 82 for rings;  
Figures 13A,B,C – added reference numbers 73, 75 for axial links; and  
Figure 14 – added lines to depict the main hole 10 and the lateral hole 12, and adjusted lead lines for 10, 12 to extend therefrom.

Annotated sheets 1-4 are also provided showing these changes made to Figures 1, 4-10 and 12-14.

**Attachments:**

- Annotated Sheets 1-4 showing changes made on Sheets 1-4 of the originally filed figures; and
- Replacement Sheets 1-4, incorporating the amendments.

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### REMARKS/ARGUMENTS

Claims 33-34 remain in the application. Claim 33 has been amended herein to correct minor clerical errors. Claims 1-32 and 35-38 have been canceled. No new matter has been added by way of amendment.

Applicant wishes to point out that, since the paragraphs are numbered differently in the application as published and the application as filed, all paragraph numbers referred to herein are of the application as published.

#### I. Election/Restrictions (OA, ¶¶. 1-2):

The Examiner has indicated that “[t]his application contains claims directed to more than one species of the generic invention,” and that “[t]hese species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.” *See Office Action, p. 2.*

##### A. **Applicant Traverses the Election/Restriction.**

Applicant respectfully disagrees with the Examiner’s characterization of the species, and with the Examiner’s conclusion that the identified species “do not relate to a single general inventive concept under PCT Rule 13.1.” Applicant submits that Applicant’s invention relates to a drilling tool with a drilling shaft comprising a series of coaxial ring members connected together such that adjacent ring members are flexible in an axial plane relative to each other, and that adjacent ring members are provided with connecting members and axial supports for transmitting torque and load therebetween. *See, e.g., Specification at paragraph [0010] and FIGS. 1-14.* As further provided in Applicant’s specification, connecting members and axial supports preferably allow adjacent ring members to bend in one axial plane while remaining stiff in another axial plane offset by up to 90 degrees, but use connecting arms and axial supports arranged such that the bending plane on one side of a ring member is preferably orthogonal to that on the other side. *See Specification at paragraph [0011].* The features of the claims each recite various configurations of the connecting arms and axial supports that provide the desired bending. Thus, Applicant submits that there is a general inventive concept sufficient to maintain unity of the pending claims.

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**B. Applicant Elects Species I.**

As required, Applicant hereby elects Species I with traverse. Per the Examiner, Species I relates to Claims 33-34. In an effort to further prosecution and without admission to the Examiner's Election/Restriction, Applicant has canceled the non-elected claims.

**C. Reconsideration of Non-Elected Claims Requested Upon Allowance.**

Should a generic claim be allowed in this case, Applicant hereby requests consideration of claims to the non-elected species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. Applicant further reserves the right to pursue one or more of the non-elected and/or canceled claims in a divisional application.

**II. Drawings (OA, ¶¶. 4-6):**

The Examiner made several objections to the drawings. As requested, Applicant has provided corrected drawing sheets in compliance with 37 CFR 1.121(d). A summary of the changes made and responses to the objections are provided below (numbered in paragraphs corresponding to the paragraphs of the Office Action):

4. Applicant has amended Figures 1 and 14 to properly depict the main hole 10 and the lateral hole 20. In Figure 1, the reference character 10 was moved to properly point to the main hole 10. In Figure 14, lines depicting the main and lateral holes were added with lead lines of reference characters 10 and 20, respectively, extending therefrom. Support for these amendments are found at paragraph [0072] and [0092] of the specification.
5. While Applicant has canceled Claim 31 thereby rendering moot the objection, Applicant has amended Figure 12 and paragraph [0090] of the specification to include reference number 31 to depict the cell. Support for this amendment is found at paragraph [0090] which describes "shafts with successive cells."
6. a. Applicant has canceled Claim 31 thereby rendering moot this objection.
6. b. Applicant has amended Figure 4A such that each figure is labeled 4A1 and 4A2. Applicant has also amended paragraph [0061] of the specification to indicate that 4A1

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shows an implementation in an unloaded position, and 4A2 shows an implementation in a loaded position. A corresponding amendment has been made to paragraph [0078] to indicate the new figure numbers.

6. c. Applicant has amended Figure 5 to identify each figure as 5A and 5B, and Figure 6 to identify each figure as 6A and 6B as requested. Corresponding changes have been made to paragraphs [0062,63] of the specification.

6. d. As indicated in 6c above, Applicant has amended paragraph [0063]. This paragraph now indicates that FIG. 5B is the same implementation of FIG. 5A rotated 90 degrees. Similar amendments have been made for FIGS. 6-10.

The Examiner further indicates that "separate and distinct" explanations are needed to "illustrate whether the left side is a specific unit that may be stacked above or below the ring and link unit illustrated on the right side." Applicant submits that the specification teaches that various combinations of rings and links may be combined as shown, for example, in Figure 11. Moreover, the specification at paragraph [0089] clearly states that "[t]he exact form of structure for compression and tension support can be varied around the principles shown here" (*see also paragraph [0095]*). Thus, Applicant submits that various rings with various axial supports may be combined, and should not be limited to "a specific unit that may be stacked above or below the ring" as requested by the Examiner.

i. The Examiner suggests that FIG. 8 depicts the figure on the left with compression load supports connected to the upper ring, and the figure on the right illustrates the compression load support not connected to either the upper or the lower rings.

Applicant submits that Figures 8A and 8B, consistent with paragraph [0086] of the specification properly, depict compression load supports 52 positioned between the rings 30 and held in position by the spring mountings 54. Applicant further notes that paragraph [0065] has been amended to indicate that FIG. 8B is rotated 90 degrees from FIG. 8A.

ii. The Examiner suggests that FIG. 9 depicts the figure on the left with load supports connected to the bottom ring, and the figure on the right illustrates the load supports connected to the upper ring. Applicant submits that Figures 9A and 9B,

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consistent with paragraph [0087] of the specification, properly depict load supports 56 attached at one end to the upper ring, and load supports 56' attached at one end to the lower ring. Applicant further notes that paragraph [0066] has been amended to indicate that FIG. 9B is rotated 90 degrees from FIG. 9A.

6. e. The Examiner suggests that reference character '30' in Figure 5 cannot be used as a reference character for in separate figures. Applicant has amended Figures 5A-9B such that the reference characters are used separately for each figure.
6. f. The Examiner has indicated that axial links and load supports are connected at both ends to adjacent rings 30 which would prevent flexion between adjacent rings 30 in Figs. 6-10. Applicant respectfully disagrees. First, the axial links 48 of Figure 7 are detached from ring 30 at one end 50 (see paragraph [0084]) and the axial links 56, 56' of Figure 9 are detached from the ring 30 at one end (see paragraph [0087]). Second, as described, for example, at paragraph [0085] "the basic cell structure (two successive rings 30) has different bending stiffness at 90°. There is a rigid direction (due to the axial link 46, 48) and a soft direction at 90° thereto." Third, as further described, for example, at paragraph [0086], the supports 52 can be pushed towards the centre of the shaft, but other movements are possible." Thus, flexion is permitted as described with respect to Figures 6-10 (at least).
6. g. The Examiner has requested the use of the same reference number in Figures 12, 13A-C and 14 relating to the same embodiment. Applicant respectfully disagrees. Applicant is aware of no rule that requires the use of the same reference number, particularly in this case where Figures 12, 13A-C and 14 relate to different implementations (see, e.g., paragraph [0091] which states "FIG. 13 shows a **particular implementation of the technique generally described in FIG. 12 above.**") Thus, Applicant submits that no change is required.
6. h. Applicant has amended Figures 12, 13A and 13B to provide reference numbers for the rings and vertical lines. Applicant has amended Figure 12 to depict rings 80 and 82 consistent with the implementation of Figure 12 as depicted in Figure 13A (see, e.g., paragraphs [0069] and [0070]). Consistent with the specification at paragraph [0091] as amended, Applicant has labeled axial links in Figures 12, 13A and 13B with new

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reference numbers 73, 75. While Applicant submits that axial supports and/or connecting members may be used, Applicant has provided reference numbers 73, 75 as axial supports consistent with the Specification at paragraphs [0090] and [0091].

6. i. Applicant has amended the specification at paragraph [0071] to indicate that Figure 14 is a schematic depiction. Paragraph [0093] of the specification describes the function of the friction wheel as follows:

The external shaft segment 84' engaged in the guide 18 is caused to rotate relative to the inner shaft 88 such that it is positioned to allow bending. This rotation can be achieved using a friction wheel 90 positioned in the upper part of the guide 18 which tends to rotate the external shaft segment 84' in the guide 18 at a higher rotation than the inner shaft 88.

Applicant submits that Figure 14 as depicted, in combination with the description provided in the specification, explain sufficiently to one of skill in the art how the friction wheel may be implemented in the embodiment of Figure 14.

In view of the above and in light of the amendments and remarks provided herein, Applicant believes the objections to the drawings have been rendered moot, and that no new matter has been added. Therefore, Applicant respectfully requests the Examiner withdraw all objections to the drawings.

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**III. Specification (OA ¶. 7-8):**

The Examiner made objections to the specification as failing to have the proper section headings. As requested, Applicant has amended the specification to include the appropriate headings for Applicant's specification.

The Examiner also objected to the brief description of the drawings. As requested, Applicant has amended paragraphs [0058]-[0071] of the specification to also include an identification of the type of view and a short, specific description of the elements of the claimed invention that are being illustrated. Support for amendments to paragraphs [0058]-[0071] are found, for example at paragraphs [0074]-[0092].

In view of these amendments to the specification, Applicant requests withdrawal of the objections to the specification.

**IV. Claim Objections (OA ¶. 9):**

The Examiner objected to Claim 28 on the grounds that Independent Claim 27 is drawn to Species II and Claim 28, which depends on Claim 27, is drawn to Species III. The Examiner also objected to Claim 35 on the grounds that Claim 35 is drawn to Species VII and its dependent Claim 37 is drawn to Species IV. While Applicant respectfully asserts that there is no rule prohibiting claims with multiple embodiments and believes the objection to be unfounded, Applicant has canceled Claims 27, 28, 35 and 37 for unrelated reasons (namely as non-elected claims) thereby rendering this objection moot.

**Conclusion:**

In view of the amendments and remarks made herein, Applicant respectfully submits that the application is now in condition for allowance. Accordingly, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Applicant files herewith a petition for revival of the present application. Applicant also requests a three-month extension of time for this response and petition. Applicant has enclosed authorization for credit card payment to cover the fees associated with this response. In the event that any issue arises with this payment, the Commissioner is authorized to apply any charges not covered or any credits, to Applicant's Deposit Account 50-5170 (Reference Number 21.1179). If there are any questions concerning the above, please contact the undersigned.

Date:

3/19/10

Respectfully submitted,

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## Attachments:

1. Annotated Sheets 1-4; and
2. Replacement Sheets 1-4.

Version with Markings to Show Changes Made  
1/4

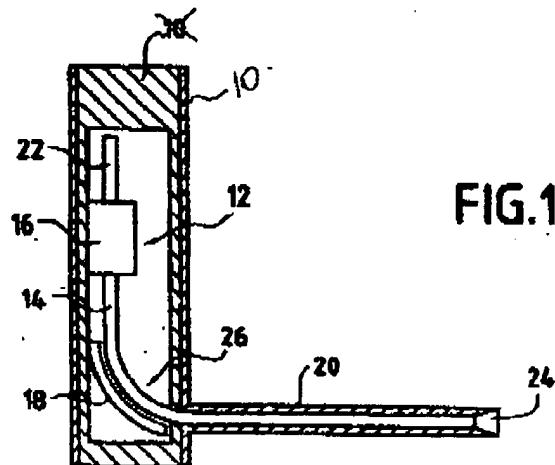


FIG.1

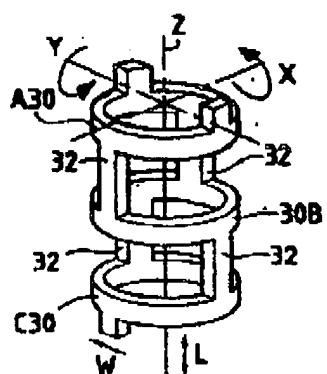


FIG.2A

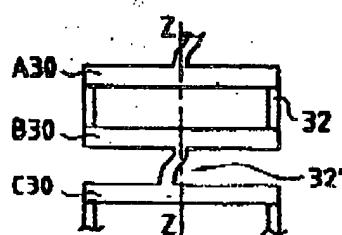


FIG.2B

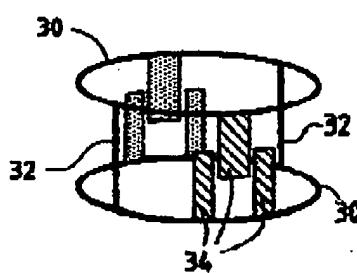


FIG.3

VERSION WITH MARKINGS THAT SHOW CHANGES MADE  
 $\frac{2}{14}$

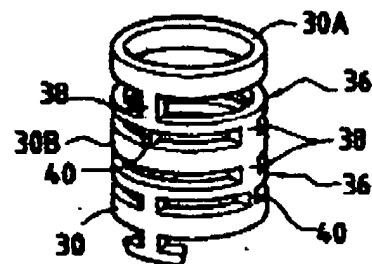


FIG. 4A1

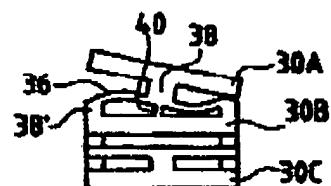


FIG. 4A2

~~FIG. 4A~~

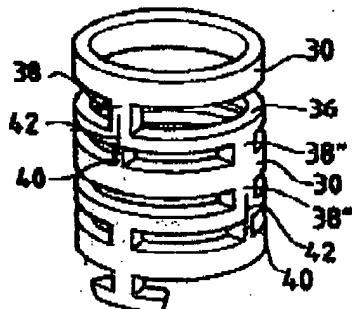


FIG. 4B

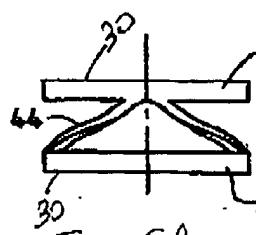


FIG. 5A

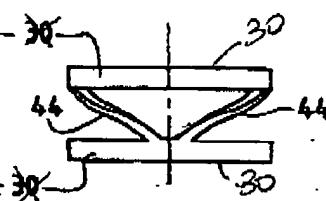


FIG. 5B

~~FIG. 5~~

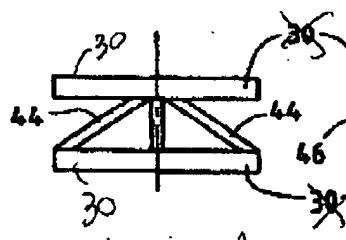


FIG. 6A

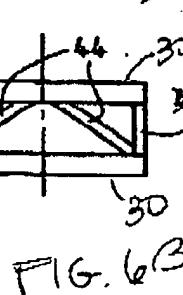


FIG. 6B

~~FIG. 6~~

VERSION WITH MARKINGS TO SHOW CHANGES MADE  
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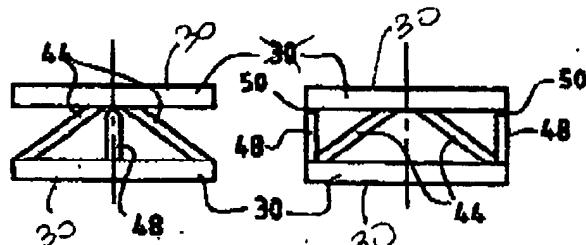


FIG. 7A

FIG. 7B

FIG. 7

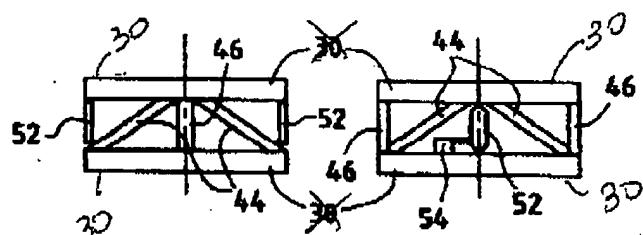


FIG. 8A

FIG. 8B

FIG. 8

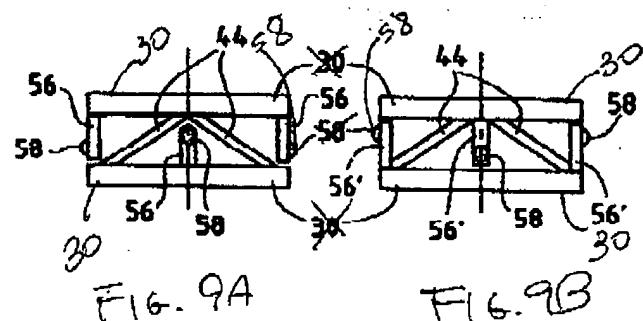


FIG. 9A

FIG. 9B

FIG. 9

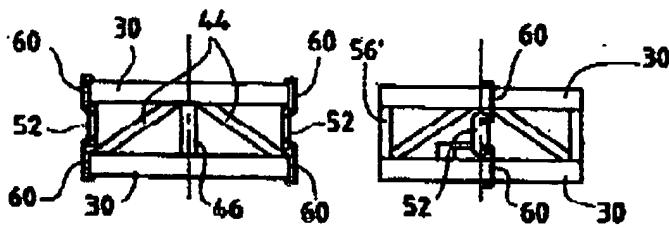


FIG. 10A

FIG. 10B

FIG. 10

VERSION WITH MARKINGS TO SHOW CHANGES MADE  
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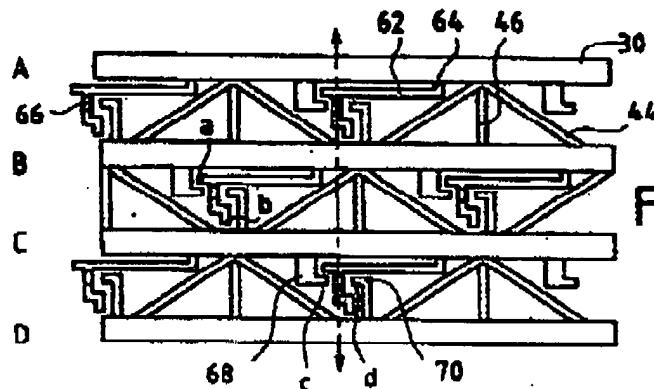


FIG. 11

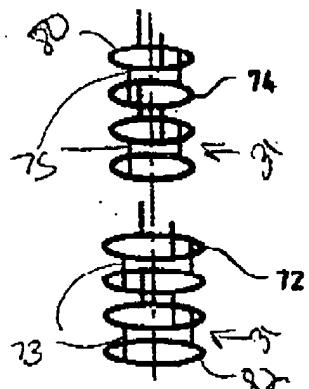


FIG. 12

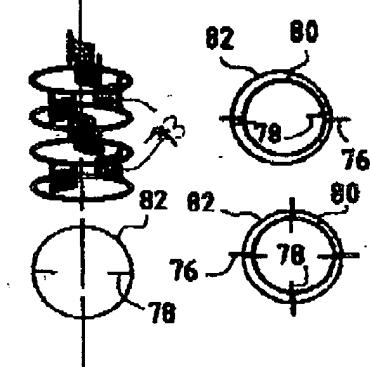
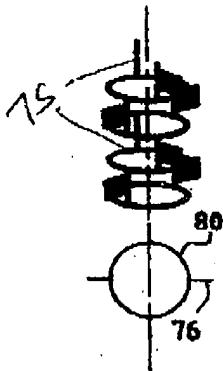


FIG. 13

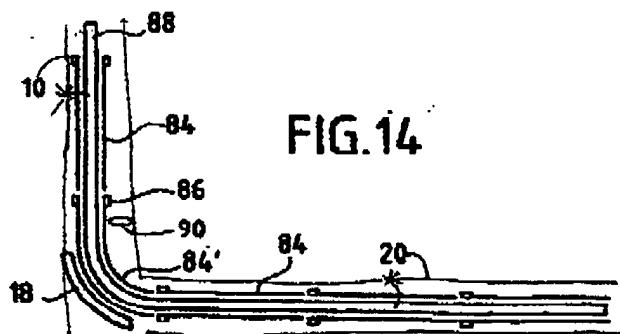


FIG. 14